

What is claimed is:

1. An isolated polynucleotide comprising a polynucleotide sequence selected from the group consisting of:

5 (a) a polynucleotide having at least a 70% identity to a polynucleotide encoding a polypeptide comprising amino acids 1 to 657 of SEQ ID NO:2;

(b) a polynucleotide which is complementary to the polynucleotide of (a); and

(c) a polynucleotide comprising at least 15 sequential bases of the polynucleotide of (a) or (b).

10 2. The polynucleotide of Claim 1 wherein the polynucleotide is DNA.

3. The polynucleotide of Claim 1 wherein the polynucleotide is RNA.

4. The polynucleotide of Claim 2 comprising the nucleotide 1 to 1974 set forth in SEQ ID NO:1.

15 5. The polynucleotide of Claim 2 comprising nucleotide 1 to 1971 set forth in SEQ ID NO:1.

6. The polynucleotide of Claim 2 which encodes a polypeptide comprising amino acid 1 to 657 of SEQ ID NO:2.

20 7. An isolated polynucleotide comprising a member selected from the group consisting of:

(a) a polynucleotide having at least a 70% identity to a polynucleotide encoding the same mature polypeptide expressed by the tRNA synthetase gene contained in NCIMB Deposit No. 40771;

(b) a polynucleotide complementary to the polynucleotide of (a); and

(c) a polynucleotide comprising at least 15 bases of the polynucleotide of (a) or (b).

25 8. A vector comprising the DNA of Claim 2.

9. A host cell comprising the vector of Claim 8.

10. A process for producing a polypeptide comprising: expressing from the host cell of Claim 9 a polypeptide encoded by said DNA.

30 11. A process for producing a cell which expresses a polypeptide comprising transforming or transfecting the cell with the vector of Claim 8 such that the cell expresses the polypeptide encoded by the cDNA contained in the vector.

2. A process for producing a tRNA synthetase polypeptide or fragment comprising culturing a host of claim 9 under conditions sufficient for the production of said polypeptide or fragment.

13. A polypeptide comprising an amino acid sequence which is at least 70% identical to amino acid 1 to 657 of SEQ ID NO:2.

14. A polypeptide comprising an amino acid sequence as set forth in SEQ ID NO:2.

15. An antibody against the polypeptide of claim 13.

16. An antagonist which inhibits the activity of the polypeptide of claim 13.

10 17. A method for the treatment of an individual having need of tRNA synthetase comprising: administering to the individual a therapeutically effective amount of the polypeptide of claim 13.

15 18. The method of Claim 16 wherein said therapeutically effective amount of the polypeptide is administered by providing to the individual DNA encoding said polypeptide and expressing said polypeptide *in vivo*.

19. A method for the treatment of an individual having need to inhibit tRNA synthetase polypeptide comprising: administering to the individual a therapeutically effective amount of the antagonist of Claim 16.

20 20. A process for diagnosing a disease related to expression of the polypeptide of claim 13 comprising:

determining a nucleic acid sequence encoding said polypeptide.

21. A diagnostic process comprising:

analyzing for the presence of the polypeptide of claim 13 in a sample derived from a host.

25 22. A method for identifying compounds which bind to and inhibit an activity of the polypeptide of claim 13 comprising:

contacting a cell expressing on the surface thereof a binding for the polypeptide, said binding being associated with a second component capable of providing a detectable signal in response to the binding of a compound to said binding, with a compound to be screened under conditions to permit binding to the binding; and

determining whether the compound binds to and activates or inhibits the binding by detecting the presence or absence of a signal generated from the interaction of the compound with the binding.

23. A method for inducing an immunological response in a mammal which comprises inoculating the mammal with tRNA synthetase, or a fragment or variant thereof, adequate to produce antibody to protect said animal from disease.

24. A method of inducing immunological response in a mammal which comprises, 5 through gene therapy, delivering gene encoding tRNA synthetase fragment or a variant thereof, for expressing tRNA synthetase, or a fragment or a variant thereof *in vivo* in order to induce an immunological response to produce antibody to protect said animal from disease.

25. An immunological composition comprising a DNA which codes for and 10 expresses a tRNA synthetase polynucleotide or protein coded therefrom which, when introduced into a mammal, induces an immunological response in the mammal to a given tRNA synthetase polynucleotide or protein coded therefrom.

26. A polynucleotide consisting essentially of a DNA sequence obtainable by screening an appropriate library containing the complete gene for a polynucleotide sequence set forth in SEQ ID NO:1 under stringent hybridization conditions with a probe having the sequence of said polynucleotide sequence set forth in SEQ ID NO:1 or a fragment thereof; and isolating said DNA sequence.

27. A method of screening drugs to identify those which interfere with the interaction of the methionyl tRNA synthetase which method comprises measurement of 20 enzyme activity by the full aminoacylation reaction or the partial PPi/ATP exchange reaction.